

**REMARKS****Summary of the Office Action**

Claims 1 and 2 stand rejected under 35 C.F.R. § 102(b) as being anticipated by Publication Infrared Technology and Applications, Non-cryogenic quantum detection in the mid IR using InAsSb photovoltaic structures, Rakovska et al. (hereinafter "Rakovska").

Claims 3-7, while objected to as being dependent upon a rejected base claim, would be allowable if rewritten in independent form.

**Summary of the Response to the Office Action**

Applicants have amended claim 1 to differently describe embodiments of the disclosure of the instant application. Claims 3-5 have been rewritten to place them each in independent form. Claims 6-7 have been amended to change their dependencies. Applicants have also added new claims 8-12 to afford Applicants with scope to which they are entitled. Accordingly, Claims 1-12 are currently pending for consideration.

**Rejection under 35 U.S.C. § 102(b)**

Claims 1 and 2 stand rejected under 35 C.F.R. § 102(b) as being anticipated by Rakovska. Applicants have amended claim 1 to differently describe embodiments of the disclosure of the instant application. To the extent that this rejection might be deemed to still apply to the claims as newly-amended, it is respectfully traversed for at least the following reasons.

Independent claim 1 has been amended to describe a semiconductor photocathode emitting electrons from a front surface in response to an incidence of infrared radiation that includes, among other features, first and second electrodes respectively formed on front and back

surfaces of said semiconductor photocathode; and an n-type contact layer interposed between the first electrode and the front surface. In addition, the semiconductor substrate of claim 1 is now described as being p-type, and the first compound semiconductor layer of claim 1 is now described as being is p-type.

Applicants respectfully submit that Rakovska does not teach or suggest at least these newly-added features of amended independent claim 1. For example, Rakovska utilizes an "n-type" GaSb substrate, as shown in Fig. 1. Also, Rakovska does not teach, or even suggest, an n-type contact layer (7) for an electrode (8) as recited in newly-amended claim 1. Even further, Rakovska does not teach or suggest the electrodes described in independent claim 1. The photocathode disclosed in Rakovska is not a field assist type photocathode. On the other hand, Applicants respectfully submit that the semiconductor photocathode described in independent claim 1 is a field assist type photocathode. A bias voltage is applied to this photocathode between the electrodes. As a result, Applicants respectfully submit that the combination described in newly-amended independent claim 1 is particularly different from the disclosure of Rakovska.

Accordingly, Applicants respectfully assert that the rejection under 35 U.S.C. § 102(b) should be withdrawn because Rakovska does not teach or suggest each feature of independent claim 1, as amended. As pointed out in MPEP § 2131, "[t]o anticipate a claim, the reference must teach every element of the claim." Thus, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. Of California, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987)." Furthermore, Applicants respectfully assert that dependent claim 2 is

allowable at least because of its dependence from independent claim 1, as amended, and the reasons set forth above.

The Examiner is thanked for the indication that claims 3-7, while objected to as being dependent upon a rejected base claim, would be allowable if rewritten in independent form. In accordance with the Examiner's indication of allowable subject matter, each of claims 3-5 have been amended to include the features of previous claims 1 and 2, thus rewriting each claims 3-5 in independent form. These claims are now in prima-facie condition for allowance.

Dependent claims 6-7 have been amended to change their dependencies. Applicants have also added new dependent claims 8-12 to afford Applicants with scope to which they are entitled. Applicants respectfully submit that dependent claims 6-12 are allowable at least because of their dependence from one of independent claims 1, 3, 4 and 5, and the reasons set forth above.

### **CONCLUSION**

In view of the foregoing, Applicants submit that the pending claims are in condition for allowance, and respectfully request withdrawal of all outstanding objections and rejection, and request the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution. A favorable action is awaited.

**EXCEPT** for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including

any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573.

This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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